

### Abstract of the Invention

A system for regulating gate oxide layer formation is provided. The system includes one or more light sources, each light source directing light to one or more gate oxide layers being deposited and/or formed on a wafer. Light reflected from the gate 5 oxide layers is collected by a measuring system, which processes the collected light. The collected light is indicative of the thickness and/or uniformity of the respective gate oxide layers on the wafer. The measuring system provides thickness and/or uniformity related data to a processor that determines the thickness and/or uniformity of the respective gate oxide layers on the wafer. The system also includes a plurality of gate oxide layer 10 formers where each gate oxide former corresponds to a respective portion of the wafer and provides for gate oxide layer formation thereon. The processor selectively controls the gate oxide layer formers to regulate gate oxide layer formation on the respective gate oxide layer formations on the wafer.